



HINDUSTAN

INSTITUTE OF TECHNOLOGY & SCIENCE
(DEEMED TO BE UNIVERSITY)

REPORT ON SUSTAINABLE DEVELOPMENT GOALS 2021



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Report on Clean Energy

Reducing Carbon Emission

HITS is working hard to reduce energy consumption, increase efficiencies, use more renewable energy sources, and reduce its carbon footprint. We have ambitious targets to reduce our carbon emissions from our activities to reduce our impact on the natural environment. We aim to deliver 40% reduction in co2e by 2022 from 2011 level and compensate for remaining emissions by developing research and low carbon technology solutions.

Initiatives towards Clean Energy

1. Generating our own energy from renewable sources such as
 - Solar panels
 - Solar water heating and
 - Biogas Plants
2. Existing Lighting to be upgraded to LED lighting
3. Cutting down on the need for air conditioning



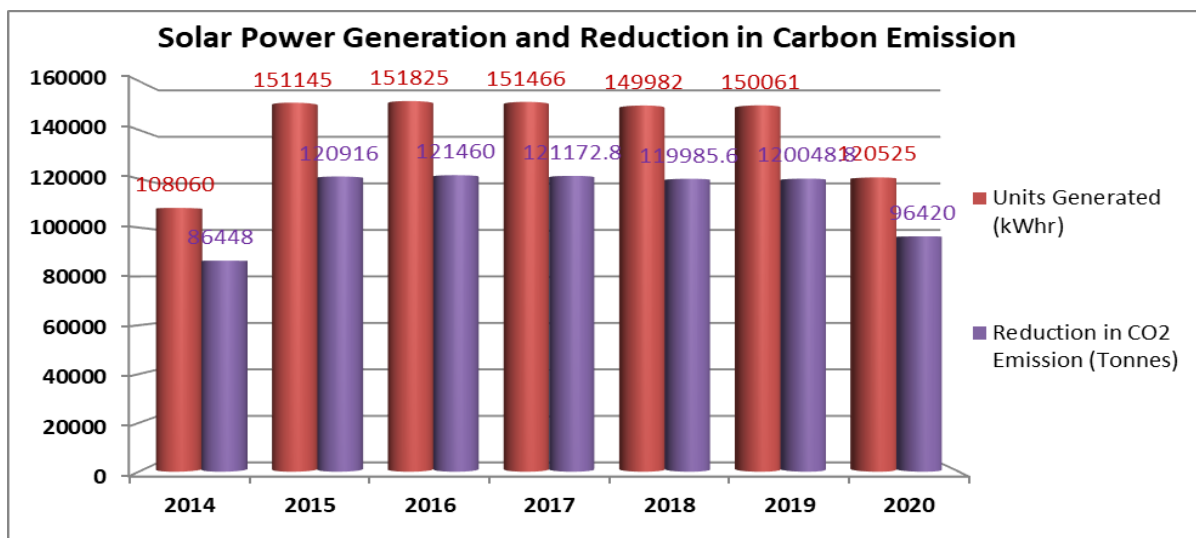
Report on 100 KW solar Power Generation System

100 KW on-grid solar power generation system was installed in our campus on May-2014. Installations were done through TATA Power Solar. Multi-crystalline solar power panels are utilized for power generation depends on the environmental condition. A total of 440 panels with each panel capacity of 230 W are used for generation. Solar panels were placed in the roof top and it occupies around 10000 Square meters. Every 88 panels are connected to an inverter and a total of 5 inverters are in place. The power obtained from the inverters are synchronised with the electricity board supply and distributed to the UPS and lighting loads. The total value of the project is Rs.87.5 Lakhs.

System Information

- Capacity – 100 KW
- PV Panels – 440 (230WP/each)
- Inverters – 5 (20 KVA/each)
- Area – 10000 Sq.Ft.
- Data Logger - Solar-Log 1200 GPRS
- Year of Establishment – May 2014

Table: The year-wise power generation and the environmental contributions are shown below.

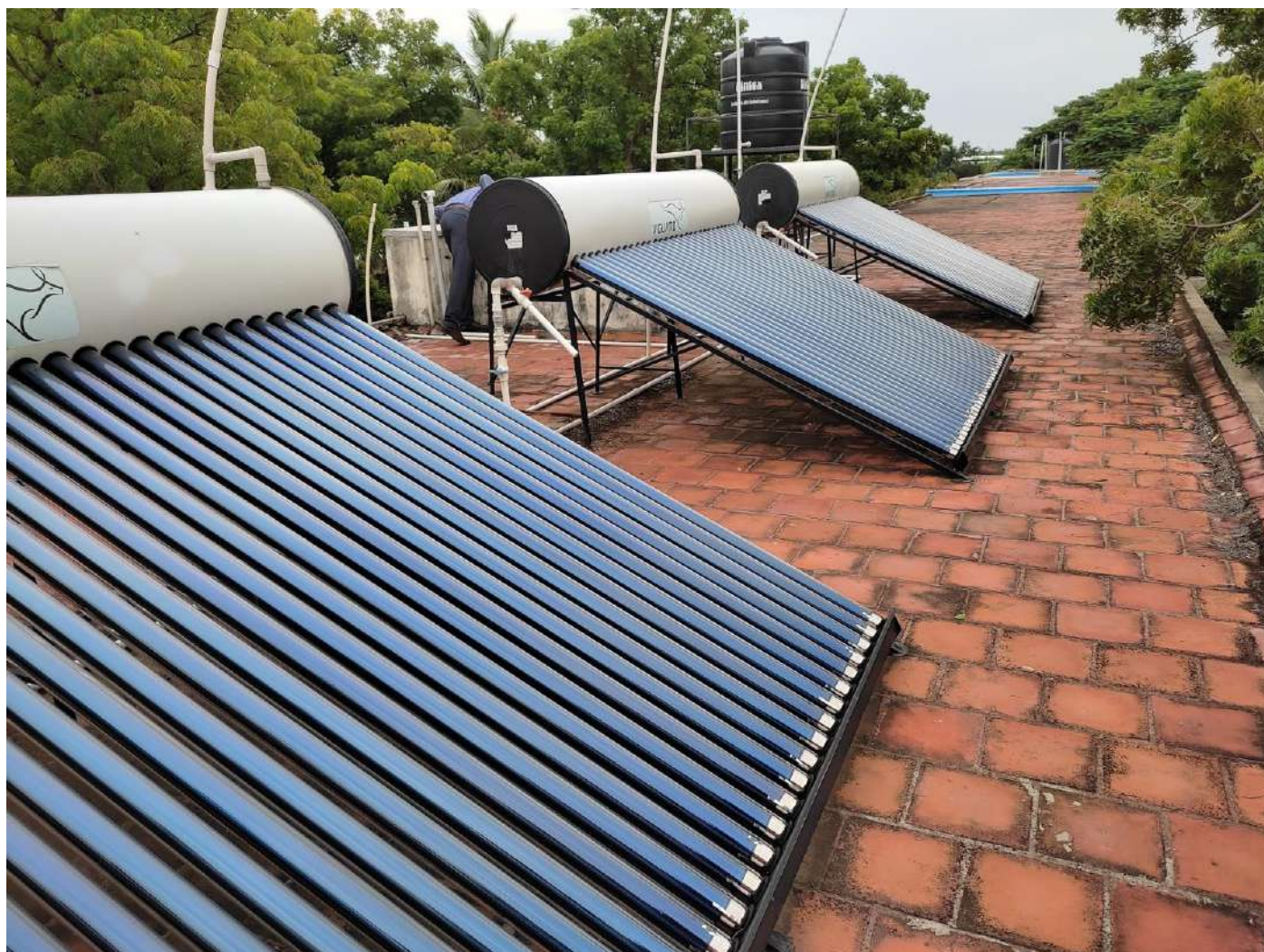


Solar panels for generating electricity



SOLAR WATER HEATERS

Solar water heating is one of the most common and cost-effective uses of solar energy. Solar heating systems, convert the heat energy from the sun into useful energy by heating water or any thermic fluid for use in multiple applications as given below. Solar water heating systems use collector panels to capture the sun's radiation and convert it into useful heat in the form of hot water. HITS started Installation of Solar water heaters in the year 2011 and its functioning and utilized in all the hostels.



SOLAR WATER HEATERS INSTALLED AT HITS WOMEN'S AND MEN'S HOSTEL

Year	Electricity Utilization for Water Heaters (kW)	The capacity of Solar water heaters Installed (kW)	Place of Installation	% Reduction in Electricity Consumption
2014	2050	300	All Hostels	14.36
2015	2100	350	„	16.76
2016	2500	334	„	14.63
2017	2750	334	„	12.51
2018	3000	334	„	11.31
2019	3500	307	„	8.45
2020 (till June)	3500	206	„	5.86

SOLAR WATER HEATERS CARBON EMISSION MITIGATES

Year	Capacity(k.W)	Total Power Saving(kWh)	Financial Saving (in Lakhs)	Co2 Emission Mitigated (in tons)
2014	300	450,000	36	9225
2015	350	525,000	42	10,763
2016	334	501,000	40.08	10,271
2017	334	501,000	40.08	10,271
2018	334	501,000	40.08	10,271
2019	307	460,500	36.84	9440
2020 (till June)	206	309,000	24.72	6335

By installing solar water heaters we have mitigated 44k tons of carbon dioxide.

BIOGAS PLANTS

The purpose of the project is to contribute to the reduction of carbon dioxide and methane emissions into the atmosphere through the promotion of the use of biogas for cooking instead of LPG.

BIOGAS PLANT INSTALLED AT HITS

Year	The capacity of Biogas plant installed (in M ³)	The total capacity of installed Biogas plant (in M ³)	Biogas generated (in M ³)
2011	90	90	65
2012	0	90	68
2013	165	255	130
2014	0	255	145
2015	0	255	138
2016	0	255	155
2017	0	255	169
2018	150	405	321
2019	0	405	316
2020	0	405	355

The option available for management of this enormous kitchen waste was open land disposal and as animal feed. The reactor was filled with 2/3 rd of its capacity with mixed kitchen

waste, cow dung and sewage in definite proportional. The retention period was maintained for 40 days. The study was mainly based on biogas manure quality which was produced after the digestion of kitchen waste. The biogas manure which produced by kitchen waste is good of fertilizer.

REPLACING CFL LAMPS WITH LED

LEDs are well known for their efficiency, which translates to energy savings for the consumer energy savings for the consumer. Nevertheless, they have many other characteristics that make them the best choice from a sustainability perspective too. The replacement of these lights is part of a more significant energy saving initiative that also includes the retrofitting of interior light fixtures with more efficient bulbs across campus to create a unified standard of lighting. All the compact fluorescent (CFL) bulbs are planned to be replaced with LED's



Figure: 2x2 Drop Ceiling LED Light Fixtures

Centre for Clean Energy and Nano convergence (CENCON)

About Centre : The Centre for Clean Energy and Nano Convergence Centre (CENCON) was established in collaboration with Quantum – Functional Semiconductor Research Centre (QSRC) of Dongguk University with an objective to promote basic and applied research. **The centre was inaugurated by His Excellency, Dr. A. P. J. Abdul Kalam, former President of India on 6th January 2011.** The center aims to work towards clean energy solutions incorporating the quintessence of Nanotechnology. CENCON is one of the members of the international Consortium on nanotechnology along with KTH Sweden and Dongguk University South Korea. The Centre strives to contribute to the Nation’s growing need for sustainable energy. As the name goes, an environmental friendly green technology has been developed for the fabrication of nanomaterial and the same is being explored for various energy applications.

The Centre has collaboration with international institute like KTH Sweden, Uppsala University, Sweden, Dongguk University, South Korea, University of Queensland, Australia and national expertise from IIT Mumbai, IIT Madras and Anna University Chennai. The Centre is capable of predicting modulated properties of various functionalized nanomaterial. The Centre is accomplished with synthesis and characterization of Nanomaterial for various applications like Lithium ion batteries, solar cells, luminescent device, sensors and visible range photocatalysts.

Conferences/Seminar/Workshops conducted (including Co-ordinator with fund allocated) / funding agency

Name of the Conference / Seminar/ Workshops
National Workshop on Energy Nano Convergence-2012 , (5-6 th Jan 2012)
International Conference on Materials for Energy Nano Convergence (ICMENC -2013) –3-6 th July 2013
Indo-Sweden Clean Energy Symposium & Inauguration of High Performance Computing Facility at Hindustan University, held on 21 – 22nd July 15
HITS – Dongguk University Joint Symposium on 21st March 2016
International Symposium on “Recent Advances in Nanomaterials” 20th February 2017
Workshops on “Modeling and Simulations of Nanomaterials using VASP” and “Synthesis and Characterization of Nanomaterials” held on 20 -21st Feb 2017
Workshop on “Synthesis & Characterization of Materials for Solar cell Applications, 9 th April 2018

The International Symposium on “The Smart Future with Innovation in Materials” and workshop on Chemical Vapour Deposition technique held on 30th October 2018

Funded Project details (From the commencement of Centre):

Sl. No	Year of Sanction	Title of Project	Funding Agency	Amount Received	Current status of Project
1	2013	Enhancement of Photovoltaic efficiency by down conversion phosphors for underwater Solar panels towards Navel applications	NRB, DRDO	24,46,280	Completed April 2018
2	2017	Development of a Photoelectrochemical Cell (PEC) using Si based (In)GaN Nanowires for Hydrogen production by Splitting of Water under Visible Light	NPDF, SERB	18,70,000	Completed September 2018
3	2018	Edge Saturated Si ₂ BN Nano-ribbon As High – Capacity Anode Materials For Next Generation Mg-ion Batteries	TARE, SERB	18,30,000	On going
4	2019	Sn integrated 3D, porous carbon based scaffolds as high capacity anode for Sodium-ion batteries	TARE, SERB	18,30,000	Started

Guest lectures Organized related to theme 2019-2020

International Workshop and Guest Lecture

“Sustainable Energy & Smart Grid” on 8 Aug. 2019.

Prominent speakers at the event included Dr. Joseph Antony, Associate Professor, School of Chemical & Process Engineering, University of Leeds, UK; Mr. N. Nallarasam, GM (SO & PSDF), NLDC, Power system operation Corp.8 Ltd., Delhi; Dr. R. Gnanadass, Professor, Pondicherry Engineering College; Dr. Petros Aristidou, Assistant Professor, Dept. of EEE, University of Leeds, UK; Dr. Velraj, Professor & Director, Anna University, Chennai; Dr. Sakthi Ganesh, Managing Director, Velev Motors, Chennai; and Dr. S. Umashankar, Associate Professor, Prince Sultan University, Saudi Arabia.

Guest Lecture on “Strategies and Practice of Zero Emission, Circular Economy and Material Flow Management” by Prof. Dr. Peter Heck, Managing Director, Institute for Applied Material Flow Management, Germany was organized on 16 Aug. 2019.

Online Lecture on “Sustainable Development - How can you HELP?” by Dr. Ngien Su Kong, Associate Professor & Head, Department of Civil Engineering, Universiti Malaysia Pahang, Malaysia was scheduled on 30 Apr. 2020.

Guest Lecture on “Waste Water Transport and Treatment” by Prof. Ian Holman, Head, Civil Engineering, Service Engineering and Food Technology, Cranfield University, UK on 19 Sept. 2020.

Webinar on “Energy Management, Energy Audit & Career Opportunities” by Dr. P. Dharmalingham, Director, Ensava Consulting & Training Pvt. Ltd., & Former Director & Head, National Productivity Council, Chennai, was organized on 20 May 2020.

Online Webinar on Chemical Engineering Responses to Environmental Challenges

Date: 21-08-2020

Resource Person:

Dr.B.Sujan Kumar, Associate Professor, BIT Sindri, Jharkand.

The Online Webinar mainly focused on the Environmental Challenges. Around 50 participants from different schools across the state registered for the conference.

Online Webinar on Renewal Energy Production & Supply

Date: 10-08-2020

Resource Person:

Dr. Krishna Rubigha, Founder & CEO, Ampere Voltege Consulting Pvt. Ltd

The Online Webinar mainly focused on the Renewal Energy Production & Supply

Recent Advancements in Renewable Energy

Date : 27-08-2019

Resource Person:

Dr. R. Vinu, Associate Professor, Department of Chemical Engineering, IIT Madras

The lecture mainly focused on the fundamentals of conversion of renewable and non-renewable feed stocks to biofuels, chemicals and materials via different techniques including catalytic fast pyrolysis, catalytic fast hydro pyrolysis, microwave assisted pyrolysis, and microwave assisted solvolysis, the various processes involved in the utilization different feedstock like lignocellulosic biomass, lignin, microalgae, waste plastics, waste oils, e-wastes, municipal solid wastes (MSW) and coals.

Industrial Visit to Biogas Plant managed by Carbon Loops Pvt. Ltd. at Loyola College campus was scheduled on 18 Feb. 2020.

Conferences Organized related to theme

National Conference on Water, Energy and Environment (WEECON'19)

Date: March 21-03-2019 & 22-03-2019

Resource Persons:

- Dr. Saravanan Pichiah, Head, Environmental Nanotechnology Laboratory, IIT (ISM), Dhanbad, Jharkhand
- Dr. Akshaya Panigrahi, Principal Scientist, Crustacean Culture Division, ICAR-Central Institute of Brackish Water, Aquaculture, Chennai
- Dr. Venkata Mohan S., Principal Scientist, Bioengineering and Environmental Science Lab, Indian Institute of Chemical Technology, Hyderabad, India
- Mr. Jayannathann K, India Regional Operation Manager, International Water Association (IWA), Chennai

WEECON'19 was organized by Department of Chemical Engineering, HITS, in collaboration with Indian Institute of Chemical Engineers (IChE) and Association of Biotechnology Led Enterprises (ABLE). The objective of WEECON'19 was to integrate research, technology and practice in the field of Water, Energy & Environment and bring together Scientists, Academicians, Students, Consultants across the Nation to share their knowledge. It also provided an interdisciplinary platform to discuss about the challenges encountered and recent innovations in the field of Water, Energy and Environmental Management.



Electives offered related to theme

Sub Code	Subject Name	Regulation	Description
CYF252	Waste to energy conversion technology	2015	The course emphasizes on the chemical and biochemical processes for converting waste to energy for cleaner environment

CYF352	Industrial Pollution Prevention and Control	2015	This course describes the types of industrial pollutants and methods adopted to minimize and prevent the release of the pollutants into the environment.
CYF351	Bio refineries	2015	This course provides knowledge on the biofuels, bioenergy, processing of biodiesel and the current and future EU regulations.
CHD353	Water science Engineering	2015	Covers various technologies involved in water purification & reuse.
CHC353	Energy Engineering	2015	Deals with energy efficiency, energy services, facility management, plant engineering, environmental compliance and alternative energy technologies.
CHC4254	Fuels and Furnaces	2018	Describes heat energy to fuel and the use of furnace in the energy production
CYD4293	Alternate fuels	2018	This course imparts knowledge on the various alternate fuels employed in CI and SI engines to control the automotive exhaust emissions

Publication details (2018-19)

1. Comprehensive study on the effect of CuO Nano fluid prepared by one step chemical synthesis method on the behaviour of waste cooking oil biodiesel in CI engine. S.Induja, Journal of Thermal Science and Engineering Applications, August 2019.
2. Particulate matter in stack emissions, generated by various fuels- a comparative study. S.Sumathi, Eco. Env. & Cons.25 (2):2019 Comprehensive study
3. Calcium-boro-phosphates supported NiO catalyst for enhanced oxidation of carbon monoxide and hydrocarbons, B.Gajalakshmi, S.Induja, P.S.Raghavan, Rasayan Journal of Chemistry, April 2018.

Hydrogen production- 3 papers

- Growth of gallium nitride nanowires on sapphire and silicon by chemical vapor deposition for water splitting applications, Applied Surface Science, 2018
- Photocatalytic hydrogen production using bench – scale trapezoidal photocatalytic reactor- International journal of hydrogen Energy, 2019

- Performance Square and Trapezoital Photoreactors for Solar Hydrogen Recovery from Various Industrial Sulphide Wastewater using CNT/Ce³⁺ doped TiO₂- International journal of hydrogen Energy, 2019

Hydrogen storage – 7 papers

- Remarkable Improvement in Hydrogen Storage Capacities of Two-dimensional Carbon Nitride (g-C₃N₄) Nanosheets Under Selected Transition Metal Doping- International journal of hydrogen Energy
- Light Metal Decorated Graphdiyne (GDY) Nanosheets for Reversible Hydrogen Storage, Nanotechnology Vol. 29, No.35, (2018) **Nanotechnology**,
- Enriching the Hydrogen Storage Capacity of Carbon Nanotube Doped with Polyolithiated Molecules, **Appl Surf Sci** (2018).
- Manipulating energy storage characteristics of ultrathin boron carbide monolayer under varied scandium doping. **RSC Adv.** 7, 8598–8605, 2017, doi: 10.1039/C6RA24890J.
- Hydrogen storage properties of light metal adatoms (Li, Na) decorated fluorographene monolayer. **Nanotechnology** 06, 26 (27), 275401, 2015, doi:10.1088/0957-4484/26/27/275401.

Energy storage papers – 12

- Designing strategies to tune reduction potential of organic molecules for sustainable high capacity battery application. **J. Mater. Chem. A**, 5, 4430–4454, 2017, doi: 10.1039/C6TA09760J.
- Assessing the electrochemical properties of polypyridine and polythiophene for prospective applications in sustainable organic batteries. **Phys. Chem. Chem. Phys.** 19, 3307–3314, 2017.
- Enhanced electrochemical performance of nanopyramid-like LiMnPO₄/C cathode for lithium–ion batteries, **Applied Surface Science**, 495,143541.
- Li and Mn-rich Li₄Mn₅O₁₂–Li₂MnO₃ composite cathode for next generation lithium-ion batteries, **Journal of Energy storage**, Vol 24, 100754.
- Electrospun 3D CNF–SiO₂ fabricated using non-biodegradable silica gel as prospective anode for lithium–ion batteries, **Ionics**.
- g-C₃N₄ doped MnS as high performance electrode material for supercapacitor application, Vol. 246, 88-91, **Materials Letters**.
- Spherical LiZnBO₃: Structural, Optical and Electrochemical Properties, **Material Science for Energy Technologies** 2, 267-271(2019).
- Enhanced Electrochemical Performance of LiCoBO₃ Cathode Material for Next Generation Lithium-ion batteries. **Applied Surface Science**, 449, 421-425
LiMn_{0.5}Co_{0.5}BO₃ Solid Solution: Towards High Performance Cathode Material for Next

generation Lithium-ion battery. **International Journal of Hydrogen Energy**, 43, 4108 - 4111.

- Enhanced Electrochemical Performance of LiMnBO₃ with Conductive glassy phase: A prospective Cathode Material for Lithium-ion Battery, **Ionics**, 23: 1645–1653
- Electrochemical performance of Sol-gel derived Hexagonal LiMnBO₃ cathode material for Lithium-ion Batteries, **Nano Hybrids and Composites**, 17, 106 -112 (2017), Synthesis and Morphological Influence on High Capacity LiMnBO₃ Cathode Material for New Generation Lithium Ion Batteries, **ECS Transactions**, 62: 123 – 128(2014).

Solar cell -1 paper

- Enhanced near IR downconversion luminescence in Eu³⁺-Yb³⁺ co-doped V activated ZnO host: An effort towards efficiency enhancement in Si-Solar cells, *Materials Letters* 249 (2019) 9–12- D.Padma sheeba

Clean water

- Study of optical and electrical property of NaI-doped PPy thin film with excellent photocatalytic property at visible light- polymer bulletin.
- Efficient Adsorption Characteristics of Pristine and Silver-Doped Graphene Oxide Towards Contaminants: A Potential Membrane Material for Water Purification. *ChemPhysChem* 19 (17), 2250-2257.

CO2 reduction and Adsorption Paper

- Adsorption mechanism of graphene-like ZnO monolayer towards CO₂ molecules: enhanced CO₂ capture - **Nanotechnology** 27, 015502, 2016, doi:10.1088/0957-4484/27/1/015502.
- Tuning electronic and optical properties of TiO₂ with Pt/Ag doping to a prospective photocatalyst: a first principles DFT study. *Materials Research Express*.
- AR.Mahesh kumar, M.kannan and G.nataraj ,A study on performance ,emission and combustion characteristics of diesel engine powered by nano emulsion of waste orange peel oil biodiesel,*Renewable Energy* 146 (2020) pp 1781-1795 (Impact factor 4.9).
- M. Arunkumar , M. Kannan , G. Murali, Experimental studies on engine performance and emission characteristics using castor biodiesel as fuel in CI engine in Engine,*Renewable Energy* 131 (2019) pp 737-744 (impact factor 4.9).
- R.T. Sarath Babu, M.Kannan ,An experimental investigation on performance of CI engine when using LTC with blending of diesel, biodiesel and ethanol in *Int. J. Heavy Vehicle Systems*, Vol. 25, Nos. 3/4, (2019) pp 442- 454 (impact factor 0.475).
- G. Paramaguru, M. Kannan,N.Senthilkumar, P.Lawrece, “Effect of temperature on biogas production from food waste through anaerobic digestion “, in *Desalination and water treatment*, ISSN 1944-3994 doi: 10.5004/dwt.2017.21189, 85 (2019) pp 68–72 (Impact factor 1.234).

- G. Paramaguru, M. Kannan, P. Lawrence, D. Thamilselvan , “ Effects of total solids on biogas production through anaerobic digestion of food waste” in Desalination and water treatment issn-1944-3994,doi: 10.5004/dwt.2017.20167 in 2019 (Impact factor 1.234)

Publication Update 2020

Authors	Title	Journal / Source Title
Prabakaran B.	Experimental investigation of compression ignition engine fueled with Biobutanol and upgraded waste engine oil for performance	Cleaner Engineering and Technology
Padmanaba Sundar S.S., Vijayabalan P.	Pyrolysis of disposed plastic food containers and its potential in diesel engine by doping with nano particle at optimum injection timing	Sustainable Energy Technologies and Assessments
Bharti M.K., Chalia S., Thakur P., Sridhara S.N., Thakur A., Sharma P.B.	Nanoferrites heterogeneous catalysts for biodiesel production from soybean and canola oil: a review	Environmental Chemistry Letters
Sadanand A., Nagarajan R.V., Devadas M.	The façade wall: A focus on the green architecture of Laurie Baker’s houses	International Journal of Energy Production and Management
Chandrappa S., Murthy D.H.K., Reddy N.L., Babu S.J., Rangappa D., Bhargav U., Preethi V., Mamatha Kumari M., Shankar M.V.	Utilizing 2D materials to enhance H ₂ generation efficiency via photocatalytic reforming industrial and solid waste	Environmental Research
John J.G., Hariram V., Gajalakshmi B., Jeffrey J.A., John C.B.	Emission characteristics of third grade oil converted sesame biodiesel	International Journal of Vehicle Structures and Systems
Sadanand A., Nagarajan R.V., Devadas M.	The façade wall: A focus on the green architecture of Laurie Baker’s houses	International Journal of Energy Production and Management
Chandrappa S., Murthy D.H.K., Reddy N.L., Babu S.J., Rangappa D., Bhargav U., Preethi V., Mamatha Kumari M., Shankar M.V.	Utilizing 2D materials to enhance H ₂ generation efficiency via photocatalytic reforming industrial and solid waste	Environmental Research

Gowrishankar D., Kumar G.D., Prithviraj R., Sanjay V., Hariharan D., Vignesh M.	Synthesis and performance evaluation of fuel from waste plastics	International Journal of Vehicle Structures and Systems
Kanpurrani V., Vallikannu A.L.	Emission analysis of combustion process from the transportation in smart city	AIP Conference Proceedings
Rajamanickam S.K., Kasinathan S.	Fatty acid ethyl ester from Manilkara zapota seed oil: a completely renewable biofuel for sustainable development	Environmental Science and Pollution Research
Prabakaran B.	Challenges in Blending the Diesel– Ethanol Blends Using Butanol as Co-solvent Along with Diesel for Replacing the Neat Diesel to Fuel Compression Ignition Engines Suitable for Low-Temperature Application	Energy, Environment, and Sustainability
SekharS.C., KaruppasamyK., VedaramanN., SathyamurthyR., Vijayabalan P., Elshiekh A., Nadanakumar V., Manokar A.M.	Process optimization and characterization of manila tamarind seed oil extracted by the soxhlet method	International Journal of Energy for a Clean Environment
Yoganantham C., Joanna P.S.	Performance analysis of sustainable GFRP beam using HVFA ECC infill	Journal of Green Engineering

Projects

Submitted Project Titled "Large-scale Hydrogen Production from Sulphide Wastewater Using Solar Energy" to SERB under Core Research Grant on 09 Mar. 2020. Team Members Mr. N. Vimalraj & Mr. T. Santhakumar (Students) accompanied by Dr. V. Preethi at Universiti Malaysia Pahan.

REPORT ON
CLEAN WATER AND SANITATION

WATER CONSUMPTION PER PERSON

Volume of Water used in the University: Total

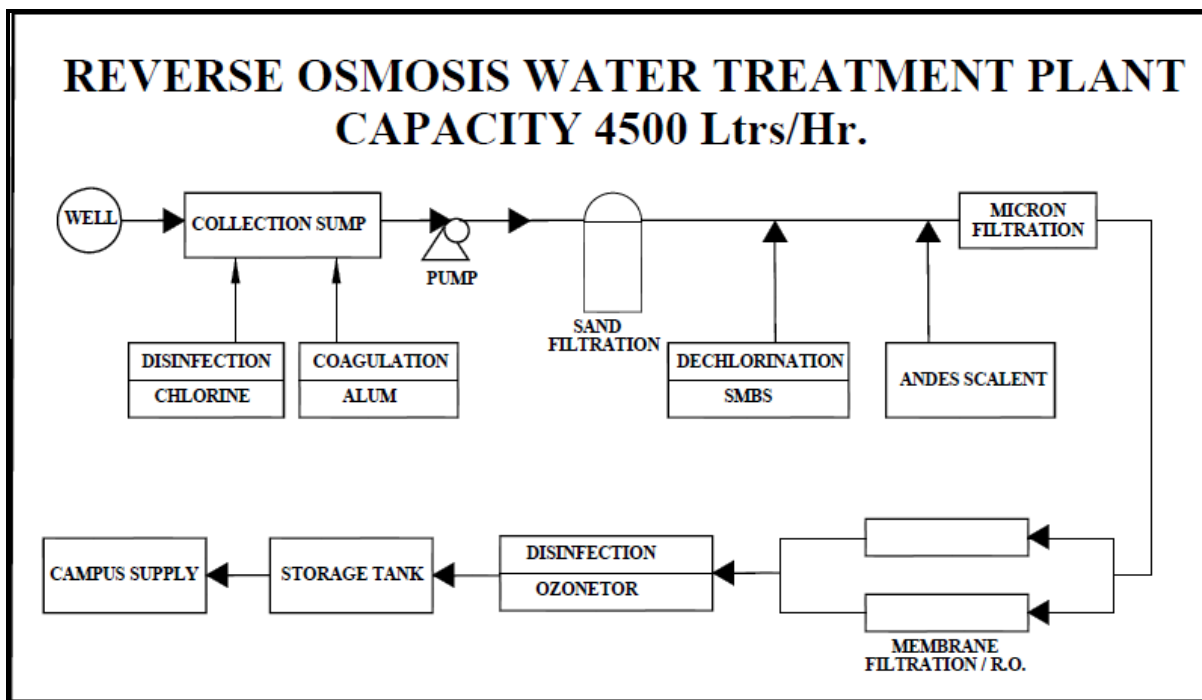
The total number of students at HITS including UG and PG	: 4800
The total number of staffs working at HITS including Teaching and non-teaching faculties	: 1000
The total number of students staying in hostel	: 1000
The total number of day scholars at HITS campus	: $4800+1000-1000 = 4800$
The total amount of water consumed by the day scholars (Considering 10L of water percapita demand)	: $4,800 \times 10 = 48,000$ L/day
The total amount of water consumed by the Hostellers (Considering 150L of water percapita demand)	: $1000 \times 150 = 150,000$ L/day
The total amount of water consumed at HITS	: $150,000+48,000 = \mathbf{198\ KLD}$

Volume of water Used in the University: Inbound (Treated / Extracted Water)

Water which is needed for the entire community of the HITS was taken directly from the Wells, which is located within the campus. The well water is taken directly to the RO plant and advance water treatment is given to the water which includes Disinfection, Filtration, membrane filtration, Micro - filtration and the hardness removal.

The capacity of RO plant is about 4500 litres per Hour and is been operated 8 times in a day

Total volume of treated water used at HITS campus was about $4500 * 8 = 40$ KLD



FLOWCHART FOR THE RO PROCESS

Volume of water used in the university, collected from Rain Water

In view of non-availability of Municipal Water connection and diminishing Ground Water Table to dangerous level, necessary measures are incorporated to collect Rain water to recharge existing wells and a water pond/lake inside the campus. Nearly 6 wells are located within our campus and out of this 5 wells were exclusively serves as a principal source of water supply for the entire campus. All rain water are taken to these wells through various storm conduits and the surface recharge for the wells been carried out. All wells are of about 35 feet depth and 20 feet in diameter.

Almost Entire water usage of about 198KLD was totally depends on the Wells located Within the campus.



Volume of water used in University: reused / recycled Water

HITS campus population almost produces about 120 KLD of waste water mainly from hostels and canteens. For treating the generated wastewater, HITS has designed its own “Sewage treatment plant” and started functioning efficiently in the campus which is of capacity 150 KLD. Basically the wastewater which is generated from the various parts of the campus is collected and taken to the STP plant through conduits, where advanced biological treatment is given to the wastewater. The treated water is re-used for gardening and the agricultural activities throughout the campus, which makes our campus a clean and green environment.

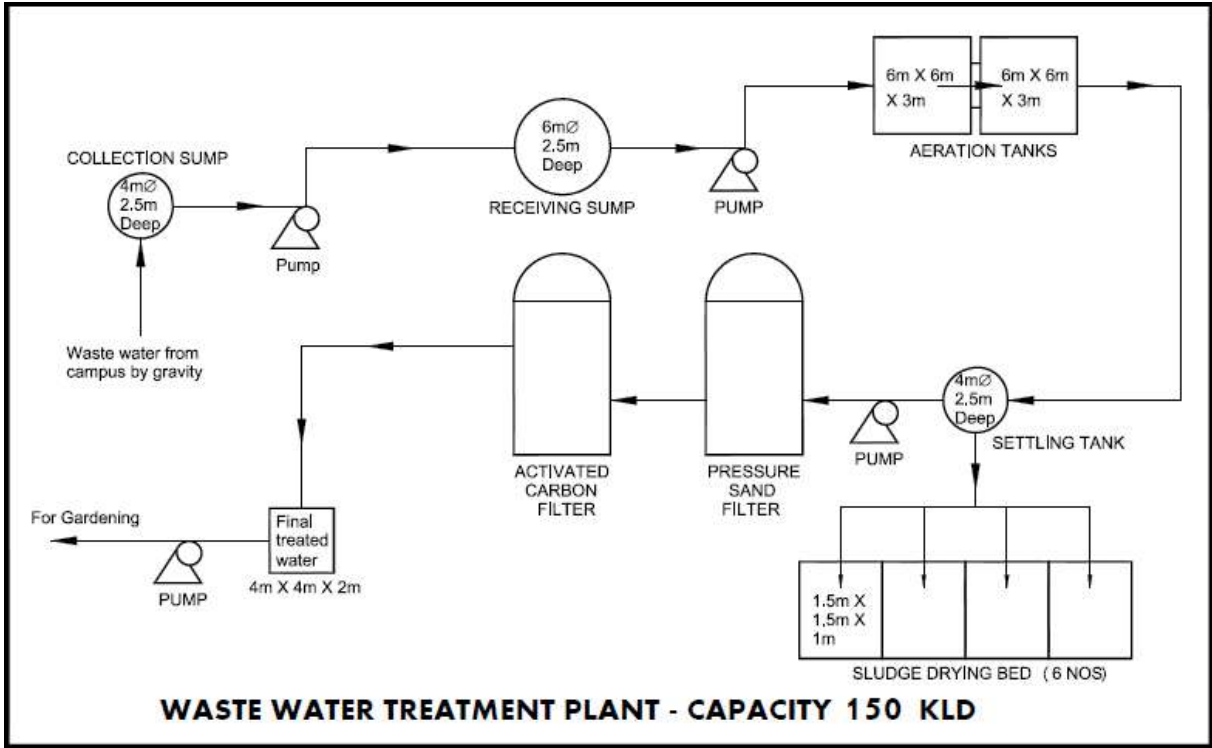


RECYCLED WATER USED FOR GARDENING ACTIVITIES

WATER USAGE AND CARE

Does your University as a body have a process in place to treat Waste Water: YES

For treating the generated wastewater, HITS has designed its own “Sewage treatment plant” of capacity 150 KLD. The wastewater which is generated from the various parts of the campus is collected and taken to the STP plant through conduits, and advance biological treatment is given. The treated waste water is used for the flushing as well as the gardening activities.



RECEIVING SUMP



AERATION TANK



CLARIFIER TANK



ACTIVATED CARBON FILTER



PRESSURE SAND FILTR



Does your University as a body have a processes to prevent polluted water entering the water system, Including the pollution caused by accidents and incidents at the University?.
- YES

In connection with prevention of pollutants entering the water source, all the wells are protected with proper mesh, so that the unwanted entry of debris in to the wells are prevented.



WELLS PROVIDED WITH MESH TO PREVENT THE DEBRIS ENTRY

Free drinking water for students, staffs and visitors:

4 Drinking water fountains is been operated with in the Campus to fulfil the drinking needs of the Campus Population and the visitors.

WATER REUSE

Volume of water used in the University: Total

190 KLD

Volume of water used in the University: Reused / Recycled Water

150 KLD

WATER TREATMENT

We have a Centralized Water treatment plant for treating the water and use it for drinking purpose, This academic year, we installed three more RO plants at campus Hostels.



All the rainwater is collected into the existing wells on the campus for the usage of the University



Capturing rainwater can be a valuable way to reduce and aim to eliminate a building's use of municipal potable water, without requiring reductions in water use by occupants. However, it is, of course, more effective in rainy climates than dry ones.

HITS has initiated and executed the rooftop rainwater harvesting in all the buildings of the Institute of Science and Technology, including hostels and guesthouse

The rainwater collected from building rooftops of buildings connected to a standard header and led to a trickling sand filter. The filtered water is used for domestic purposes after chlorination. Rainwater harvesting is also done by diverting stormwater drains and runoff from rooftops to bore wells for recharge. For this, a pit of size 2m x 2m x 2m is excavated around the dry bore well, and the casing pipe is fitted with a v-wire filter. Filter media is filled in the pit around the well. The stormwater drains and rooftop rainwater are diverted into this pit gets filtered into the borewell through the v-wire filter. Rainwater is collected from the roof and stored in large tanks. The water is then used for the flushing of toilets and prevents the drinking water from the mains being used.

RAINWATER HARVESTING PLANTS AT HITS

Sl: No	Campus	Buildings / Blocks	Number of Rainwater Harvesting	Quantity of water collected
1	HITS Bay View Campus	Founders Block	2	13000
2	HITS Bay View Campus	Jubilee Block	3	13000
3	HITS Bay View Campus	Main Admin Block	4	13000
4	Hindustan Arts and Science	Whole College	1	11000

At HITS we have harvested approximately 10,00,000 Liters of rainwater in 2020, our goal is to double the rate of rainwater harvesting by 2022.

INITIATIVES TOWARDS SDG6

Centre for Sustainable Technologies (CENSTEC)

The CENSTEC was established during the year 2014. Its objectives are to promote interdisciplinary activities that lead to sustainability associated with Built Environment, to develop cost effective solutions in the areas of green building materials, health monitoring of structural systems, water, air, solid waste management, renewable energy related to environmental resources and also to develop technologies for cleaner production.

The research activities of the CENSTEC includes synthesis of green building materials (artificial aggregates from ceramic waste, lathe waste, plastic waste, fly ash and GGBS), health monitoring of structural systems, production of renewable energy (hydrogen from sulphide wastewater, biogas production from solid waste, energy efficient buildings), treatment of pollutants and CO₂ sequestration.

CENTRE OF EXCELLENCE IN SUSTAINABLE INFRA-STRUCTURE (CENSIS)

Need in today's Infra-structural design and construction lies in the dimension of ecological and environmental sustainability. The proposed centre of excellence will provide the necessary inputs for different types of infra-structural systems ranging from residential to heritage structures and systems. The centre will have

Material cell

Model and prototype test cell

Analytical Model cell

Knowledge source cell and

Consultancy cell

Material cell will provide basic material characteristics at meso, micro and nano levels. Model and prototype cell will conduct model and prototype experiments, which will guide in the development and implementation of green and sustainable technology in different disciplines.

Analytical Model cell is the core for developing, numerical testing and consulting for different field problems. Knowledge source cell will provide facilities for storage of data and developmental activities. Consultancy cell offers consultancy, advice and solution to practical problems.

Courses Offered

B.Tech in Environmental Engineering and Water Resources

Programmes Organized

2nd INTERNATIONAL CONFERENCE ON SUSTAINABLE ENVIRONMENT ENERGY AND CONSTRUCTION on Dec 2020, International Journal of Hydrogen Energy (IJHE) brought a special issue covering a large number of scientific works. It covered topics related to hydrogen production, fuel cells, super capacitors, and batteries.

Unnat Bharat Abhiyan: NSS Cell and Rotaract Club of HITS began Unnat Bharat Abhiyan activities in the adopted villages. The Village survey and Household survey were completed in Kayaar village on 20 July 2019. NSS Cell also conducted various competitions among Government School students on the theme “Rain Water Harvesting” on 13 Aug. 2019. One Student One Tree project: One Student One Tree scheme was inaugurated by Dr. M. P. Poonia Vice Chairman, AICTE on 7 Sept. 2019.

Guest Lecture on “Waste Water Transport and Treatment” by Prof. Ian Holman, Head, Civil Engineering, Service Engineering and Food Technology, Cranfield University, UK on 19 Sept. 2020.

Mr. R.J.T. Nirmal Raj, Professor, was invited as a speaker in the 13th Annual Global Water Alliance Conference held at Novotel Hotel on 6 & 7 Jan. 2020.

Mr. Nelson Dias and Ms. T. Varsha won the First prize in Debate on the theme “Walk for Water” conducted by the Athena Literary Club on 28 Sept. 2019. They also won Second & Third prize in Elocution conducted by HITS as a part of H2O Movement - Walk for Water during Sept. 2019

Online Creative Writing Contest on theme “Water, Oh! Water...” was organized during Aug. & Sept. 2019. Students partook under different genres of writing, namely, Short Story, Sonnet, Haiku, and Essay Writing.

Chaatra 3rd Vishwakarma Awards 2019 on 18 Dec. 105 teams from various Institutions in Tamil Nadu and Puducherry exhibited their product under 8 different categories such as Waste Management, Energy, Farm and Flock, Land, Livelihood, Water etc., for evaluation. Felicitations was given by Mr. Ramesh, Dy. Director, and AICTE

“WALK FOR WATER” an event proposed by Par Anand Charitable Trust, Friends for Good Health (USA), and Healing Lives (UAE) was conducted on 1 Oct. 2019. The event held under the aegis of Dr. Sanjana Jon, a New York-based Philanthropist and Designer celebrity primarily observed Thiru S.R.L. Idhayavarman, Member, Legislative Assembly, Thiruporur Constituency; and Mr. Vijay Yesudas, Playback Singer & Actor as special guests.

International Projects

Collaboration with Uppsala University, Sweden . Developing a smart photocatalysts from edge modified TiO₂ sheet integrated with NiO nanoparticle for cost effective reduction of CO₂ clean fuel CH₄ to be submitted to DST Nano mission.

Estimation of shock levels and its impact on the underwater axi-symmetric bodies due to water entry and pyro shock AERO Dr. K. Ramajeyathilagam & Mr. Stanley Samlal worth of 6.65 Lakhs, with funded by NSTL, 11.07.2018, ONGOING.

Team Water Raiser got qualified as Finalist in PALS Innawah conducted on 27 Feb. 2020

REPORT ON
ACTIVITIES CONDUCTED WITH RESPONSIBLE CONSUMPTION AND
PRODUCTION

"Sulatha Haridas of the Food Technology Department, Consultant Dietician Has Recently Got Records from America Book of Records, India Book of Records.

In her Core Subject Food, Nutrition & Dietetics she got a record on "Most Number of Therapeutic Diet Preparation " on 1 February ,2021 From ``America Book of Records".

She is also environmentally conscious and loves to create artifacts from eco-friendly waste materials. During lockdown she got a Record from India Book of Record on ‘Best out of Waste’ crafts as confirmed on October 7, 2020."



Name of the Club: Culinary club

Name of the Coordinator: Dr. A.Surendra Babu

Name of the activity: Preparation of wheat bread, mixed fruit jam and distribution to local orphanage

Student of culinary club of Dept. of Food Technology along with five interested students had prepared wheat breads of 10 kg equal to 20 bread packets at the Baking unit present in Jupiter hostel on 16.10.19 (Wednesday) at 3.00 pm. The baked breads were packed in a polyethylene covers. Next day i.e., on 17.10.19 (Thursday) at 10.00 am a mixed fruit jam was prepared by the students at the Madurai Azhagar canteen using 2 kg of papaya, guava, banana, apple & pineapple. A jam of 6 kg jam was obtained and it is packed in a sterilized glass bottle of 500 g capacity and cooled to room temperature. Later, the 10 kg bread packets and a 6 kg mixed fruit jam were packed in a corrugated boxes. At 4.30 pm the faculties of Food Technology, Dr.A.Surendra Babu, and Dr.P.Sankarganesh along with the students took the food products to the El-Shadai children home (Orphanage), Kelambakkam.

Wheat bread & Mixed fruit jam

Donation of bread & jam to El-Shadai Children Home



ASSOCIATION OF NGOs



Rotaract Club of HITS

About Rotary

Rotary International is a global community of committed professionals working together to serve others and advance peace. More than 1.2 million members in over 34,000 Rotary clubs worldwide volunteer in communities at home and abroad.

About Rotaract

Rotaract is a service club for young men and women ages 18 to 30 who are dedicated to community and international service. Its membership totals over 184,000 in more than 8,000 clubs worldwide. Rotaract clubs are self-governing and self-supporting and can be either university- or community-based. Individual Rotary clubs sponsor Rotaract clubs and offer guidance and support, making the Rotaract clubs true “partners in service” and key members of the family of Rotary.

Service Projects

Rotaract clubs carry out two service projects each year, one that assists the local community and one that helps a community in another country. These projects are a great way for Rotaract clubs to get involved in their own community, connect with young adults globally, and attract new members.

Information on six community service priorities:

- **Peace and conflict prevention/resolution,**
- **Disease prevention and treatment,**
- **Water and sanitation,**
- **Maternal and child health,**
- **Basic education and literacy, and**
- **Economic and community development.**

ROTARACT CLUB OF HITS

RCHU conducts many events for the welfare of the society and to the poor background children's. It joins with community rotaract clubs in the district and with the other international district of rotaract club. Mainly RCHU concentrates on the fund raising events

The list of events conducts based on services

- Club services
- Community service
- Professional service
- International service

1. Unnat Bharat Abhiyan

Our NSS cell and Rotaract club of Hindustan university have started the Unnat Bharat Abhiyan activities in the adopted villages. The Village survey and Household survey were completed in Kayaar village on 20th July 2019.



3. Rotaract Club Installation

Rotaract club of Hindustan university had its 5th Installation ceremony along with RACHCAS,RACHIET,RACKCG On 24th July 2019 in Hindustan International School campus,Guindy. Rtn.Ashokraja , Director, Youth services 2019 -2020, was the chief guest and Rtn.Ashok verghese, Director, HGI was the Guest of honor for the event.



4. Sudhandira dhinam & Rainwater Harvesting awareness campaign.

Our Nss cell and Rotaract club of Hindustan university have celebrated the 73rd Independence day at Govt., Girls Higher Sec.School, Kelambakkam on 15th August 2019. Rtn.Alok Mimani was the chief guest and Rtn. Pranav was the guest of honour for the event.



5. Unnat Bharat Abhiyan

Our NSS cell conducted various competitions among Government School Students on the theme “Rain Water Harvesting”. On 13th August 2019. The Village survey and Household survey were completed in Illallur and Pudupakkam village on 17th August 2019.



6. Rotaract Club Orientation

Rotaract club of Hindustan university had its Orientation ceremony On 20th August 2019 in MGR Hall, HITS. Rtn.PDRR. Solomon victor was the speaker of the event. Dr.Manvel Raj, Dean Student affair has inaugurated the event. Around 250 students were participated in the event



7. One Student One Tree project

Hon’ble HRD Minister Dr. Ramesh Pokhriyal “Nishank” has launched a new campaign “One Student One Tree” on 20th July. This initiative is in line with the Hon’ble Prime Minister’s idea of a green and healthy environment. This initiative need support of our young dynamic students and teachers. As a responsibility towards mother nature and contribution to this initiative, AICTE recommend every institute to carry out a plantation drive. One student one tree scheme

was inaugurated by Dr.M.P.Poonia Vice chairman,AICTE on 7th Septmeber 2019 along with Dr.K.P.Isaac, VC,HITS, and Dr.Abysam,Director.



8. Blood donation camp

NSS cell of HITS in association with Rotary Club of Chennai Capital (RCCC) organized blood donation camp at HITS, Padur on 24th September 2019 in view of NSS day. Dr.Mrs.Elizabeth Varghese, Chancellor, HITS was the chief guest and Rtn.Sathish Jeyabalan president, Rotary club of Chennai capital was the Guest of honor for the event. Madras voluntary blood bank has coordinated with Adyar cancer Institute, Rajiv Gandhi Govt Hospital and kilpauk medical college for the blood banks. The students and faculty of HITS actively participated in the blood donation camp and a total of 488 units were collected.

9. Swachatta Hi Seva Campaign

NSS Cell of Hindustan institute of technology and science, Chennai has organized an awareness rally on 24th September about the use of plastic and Its effects. More than 100 students have participated in the event and more than 2000 students were given awareness through this rally.



10. Fit India Run

"Fit India" Rally was conducted by HITS in collaboration with Chennaiyin F.C on 02.10.2019 to promote fitness and hygiene in all citizens, on the auspicious occasion of 150th Birth Anniversary of the Father of the Nation. About 300 students (Hostelers, NSS , NCC & Sports) and staff participated in the rally with zeal & enthusiasm.



11. Y's Youth Camp

Mr. Albinus Sanjeevan and Ajay Kumar of Y's men club of Hindustan youth have attended a 3 day Regional Youth camp at Yercaud on 1st, 2nd and 3rd November 2019 and they have been selected as the best Youth from madras district and to attend the Area camp at Connor on 27th, 28th, 29th December 2019.



12. Diwali Celebrations

Y'S Men Club Of Hindustan Youth in association with Y'S Men club of Mylapore & Y'S Men Club of Chennai OMR Celebrated Diwali by Distributing Sweets to Needy people at Irular Colony, Thiruporur on 26th October 2019.

Rotaract club of Hindustan University celebrated Diwali at differently abled people's Home in Padur village. The team spent their time by entertaining them with songs and dance followed by distribution of books to the children. Team also presented them sweets, gifts and helped them for medical expenses. The event was sponsored by Rotary club of Chennai capital.



Rotaract Club Installation: Rotaract club of Hindustan University had its 5th Installation ceremony along with RACHCAS, RACHIET, RACKCG on 24 July 2019 in Hindustan International School campus, Guindy. Rtn. Ashokraja, Director, Youth services 19 -20 was the chief guest and Rtn. Ashok Verghese, Director, HGI was the guest of honour for the event.

Sudhandira Dhinam: NSS Cell and Rotaract Club of Hindustan University celebrated the 73rd Independence Day at Govt., Girls Higher Sec. School, Kelambakkam on 15 August 2019. Rtn. Alok Mimani and Rtn. Pranav presided over the celebrations as guests.

Unnat Bharat Abhiyan: NSS Cell conducted various competitions among Government school students on the theme "Rain Water Harvesting" on 13 August 2019. Also, the team completed Village and Household Survey in Illalur and Pudupakkam village on 17 August 2019.

Rotaract Club Orientation: Rotaract Club of Hindustan University had its Orientation Ceremony on 20 August 2019. Rtn. PDRR. Solomon victor was the speaker of the event. Dr. Manvel Raj, Dean Student Affairs inaugurated the event wherein around 250 students participated with enthusiasm.





2020 Highlights

Rotaract club of Hindustan University received 6 special awards in “Glory” Annual District Awards conducted online on 28th June 2020 by District Rotaract Council, District 3232.

Rotaract club of Hindustan University received "**Platinum Distinction Citation**" from Rotary International for the year 19-20 for the outstanding contribution to the society.

Y's Men Club of Hindustan Youth received the **Best Youth Club award** for the outstanding service and support rendered to the Madras District, South India Region for the year 2020 -21 on 24th April 2021 held at Hotel Hiblis, Guindy in the Presence of HRM Y'sMen Dr. Anand Jacob Verghese and awarded by District Governor Y's Men Muralidharan.

Rtr.Navya Sree from 3rdYear B. Sc Food Technology has University received **Harmonious Women award** in the women's day special events named “Penniyam “conducted by RaC Madras Cosmos on 6th March 2021. She was awarded for her contribution and support towards the club for the past three years and for her work as a club treasurer.

Best Youth Award 2019-2020 was awarded to Y's youth **Mr. Mujibur RahmanK** from Y's Men Club of Hindustan Youth by HRM.Ysm. M. Prabhakaran, Regional Director, South India Region in the Y's Men International, India Area, South India Region- 40thRegional Convention Celebration was held at Black Thunder Resort, Mettupalayam on 12th December 2020. Ysm. Adv. Shanavaskhan, President, India Area was the Chief Guest.

Special Appreciation Award was awarded to Y's Men club of Hindustan youth for the year 19-20 by IDPG.Ysm. Ramesh along with Regional Director Ysm. Nagarajan and Area Chief Coordinator Ysm. Dr. Anand Jacob Verghese on 3rd Jan.2021 at Malayalee club, Chennai.

NO.	DATE	EVENT TITLE	VENUE	DESCRIPTION
1	15 & 16 July 2020	Board official Training	Online	Board Official Training Session (BOTS), was conducted to the board members of Rotaract club of Hindustan University in 3 phases from 15th to 17th July 2020 on zoom platform. The sessions were handled by Rtn.Shriram Duvvuri, District Youth service Director, Rtr.Khumaravelu, District Trainer, RID 3201 and Rtr.Deepak Chandrashaker, District Trainer, RID 3232. A total of 28 Rotaractors were trained.
3	24July 2020	Power of Writing	online	Y's Men Club of Hindustan Youth NSS Cell and Rotaract Club of HindustanUniversity had an online Webinar on POWER OF WRITING in WEBEX meet on24thJuly 2020. 25 members participated in this event.
3	26 July 2020	Installations of Youth club	Online	Yy. Rahaman was installed as the president along with secretary Yy. AlbinusSanjeevan and other board members for the Y's Year 2020 21. The club exhibited all the events done by the club over past year and reported it to the District Governor PWAF. Ysm. Muralidharan. The Installation ceremony of Hindustan youth was organized along with Y's men's club of Chennai OMR on 26th July 2020.
4	15 Aug. 2020	Independence Day	online	The Y's Men club of Hindustan youth along with the HITS Alumni Association celebrated 74th Independence Day via online (Zoom). Mr. Prabhakaran IRS, The Assistant commissioner, GST & Central excise, who is also an alumnus of HITS was the chief guest for the day. Dr. E. Baskaran - Joint Director, Dept. of

				Industries and commerce, Govt. of Tamilnadu (HITSAA- President), Dr. Pon Ramalingam- Registrar of HITS were the Guest of honour.
5	15 Aug. 2021	Independence Day	Mangadu	Rotaract club of Hindustan University along with the Rotary Club of Chennai capital celebrated Independence Day celebrations at Little Drops Home, Mangadu on 15th August 2020.Rtn. D.K. Jain, President, Rotary Club of Chennai capital along with Rtr. Gokul Krishnan, President, Rotaract club hoisted the flag and the team distributed the new cloths and facemask to the home people.
6	24 Sep. 2020	Chancellor's birthday	Orphanages and old age homes.	Y's Men Club of Hindustan Youth and Y's Men Club of Mylapore celebrated chancellor's birthday by offering food and basic needs at various orphanages and good life centers. Cake was cut, happiness and joy were spread among everyone.
7	26 Sep.2020	National Education Policy 2020	online	NSS cell of HITS conducted an awareness on National Education Policy as instructed by AICTE and MHRD, we sent bulk emails to students about National Education policy 2020 and also conducted an Awareness quiz on National education policy 2020 on 26th Sep.2020.. More than 2000 students were sensitized.
8	2 Oct. 2020	Gandhi Jayanthi Celebrations	Online and HITS	NSS cell along with Dean student's office celebrated the Gandhi Jayanthi celebrations on 2nd October 2020. Dr.Bernard D'Sami, Director, LISSTAR,Loyola College,Chennai was the chief guest. Competitions were conducted among school and college students on the topic "Swachh Bharat" on that day and prizes were announced. We also did Swachh Bharat activities inside the college.
9	7 Nov.2020	Diwali Celebrations	Naduvakk arai	Rotaract club Hindustan university celebrated Diwali celebration on 7th Nov.

				2020 at Naduvakkarai, Mamallapuram. New dresses and sweets were distributed to 50 poor families. The event was sponsored by Rotary club of Chennai capital.
10	8 Nov. 2020	Diwali Celebrations	Idayankuppam	Y's men club of Chennai OMR along with Y's Hindustan Youth sponsored by Y's men club of Mylapore celebrated Diwali in Idayankuppam Irular colony, Thirupporur on 8th Nov. 2020. Sweets were distributed to 50 families and water bottles were distributed to tribal children.
11	26 Nov. 2020	Virtual Social Business students' forum	Online	5 of our NSS students participated in the "Virtual Social Business Students' Forum" (VSBSF 2020) On 25th and 26th November 2020. The key note speaker was Nobel Laureate Prof. Mohammad Yunus, Chairman, Yunus centre.
12	23 Dec. 2020	Christmas Celebrations	Ayanavaram.	NSS cell along with the Rotaract club of Hindustan University celebrated Christmas on 23rd December at ARUWE Old age home, Ayanavaram. New dresses were distributed to inmates. The event was sponsored by the Rotary Club of Chennai capital.
13	15 Jan. 2021	Pongal Celebrations	Thandalam.	Competitions were conducted among village people and prizes were distributed in view of Pongal celebrations on 15th Jan 2021. NSS cell of HITS along with Y's men club of OMR and Hindustan youth coordinated the event and more than 200 people participated in it.
14	23 Jan. 2021	125th Anniversary of Netaji Subhash Chandra Bose		The NSS cell of HITS along with the School of Physical education celebrated "Netaji Subhash Chandra Bose's 125th Anniversary on 23rd January 2021 in Thandalam Village near Thirupporur. Various competitions were conducted among village students and prizes were distributed. More than 200 students were

				participated.
15	27,28 Feb 2021 & 6 Mar.2021	Village Sports Meet	Thirupporur	Rotary Club of Chennai capital along with Rotaract club of Hindustan university has organized a village sports meet at our adopted villages on 27th Feb 1, 28th Feb and March 6th, 2021. 10 cricket teams and 18 volleyball teams from various villages have participated in the village sports meet and prizes were distributed. The event was sponsored by the Rotary Club of Chennai capital.
16	5 & 6 Apr.2021	Election Duty	Thirupporur2	20 students from NSS have participated as volunteers along with District Police Office Chengalpattu in conducting the Tamilnadu Elections on 5th and 6th April 2021. The remuneration and certificate of appreciation was given to all students by the District Police Officials.
17	25 Apr. 2021	Mini Library	Anna Nagar.	Rotaract Club Of Hindustan University has set up a Mini library in Surabhi Trust(Orphanage Home), Anna Nagar. The books were distributed to the students of Surabhi Trust on 25th April 2021. . The books were sponsored by the Rotaractors of the Hindustan Institute of Technology and science
18	May and June	Hindustan Camp Covid	Adopted villages and Govt Hospitals	Separate Report Attached as ppt format.

WASTE MANAGEMENT REPORT

Recovery of Hydrogen from Sulphide Industrial Waste (Funded by SERB, DST)

Sulphide (S^{2-}) in wastewater is corrosive and has a very unpleasant odour. As the most reduced form of sulphur, sulphide has a high oxygen demand of 2 mol O_2 /mol S^{2-} and its discharge depletes oxygen. Millions of tons of H_2S is desulfurized and detoxified every year in petroleum refineries with unrecoverable energy input. Also natural gas fields contain about 30% H_2S in their output, which is certainly a non-negligible amount. Considering all these resources and the intrinsic toxicity of H_2S , it becomes obvious that the visible light mediated photocatalytic decomposition of H_2S could cause the twin benefits of sustainable solar hydrogen production and an aesthetic environmental abatement.

CO₂ Sequestration:

The catalytic conversion of carbon-di-oxide with ethanolamine solution that sequesters carbon-di-oxide and results in zero emission of carbon-di-oxide. Though the Monoethanolamide solutions are used for CO₂ sequestration in the conventional system itself, the way of sprinkling with the help of new designed reactor for portable attachment in vehicules helps in control of CO₂ emissions.

Received Hindustan Innovative Awards 2017 for this innovative research on CO₂ Sequestration

Biogas production from food waste along with novel waste materials

Refuse is too often regarded as useless, unwanted and therefore discarded. Waste is defined as “anything rejected as worthless, or in excess of what is required”. But Byrne (Byrne, 1997) said that waste is material, which has no direct value to the producer and so must be disposed of. Bailie et al. (Bailie et al., 1996) insist that “for practical purposes, the term ‘waste’ includes any material that enters the waste-management system”, i.e. organized programmes and central facilities established not only for final disposal of waste but also for recycling, reuse, material reclamation, composting and incineration (Igoni et al., 2008).

MSWM is one of the major environmental problems of Indian megacities. Municipal solid waste generally includes degradable (paper, textiles, food waste, straw and yard waste), partially degradable (wood, disposable napkins and sludge) and non-degradable materials (leather, plastics, rubbers, metals, glass, ash from fuel burning like coal, briquettes or woods, dust and electronic waste) (Jha et al., 2011; Herat, 2009; Tchobanoglous et al., 1993). The food wastes have high organic content and hence its treatment by the process of bio-methanation is most viable as it produces useful products like biogas and enriched manure. In this study, we have conducted lab-scale bio-methanation studies for biogas recovery from food waste generated from hostels in Hindustan Institute of Technology and Science (HITS). We have achieved maximum quantity of biogas production from food waste along with novel waste materials.

Vermicomposting - Manure generated is used in the cultivation nearby





Source Reduction

TOTAL WASTE GENERATED AND RECYCLED AT HITS

Years	2015	2016	2017	2018	2019	2020 Up to June
Total wastage generated	1,14,400	1,70,400	2,02,800	1,20,900	218,809	125,105
Plastic	17,070	7,550	4,920	7,600	10,277	6952
Papers	17,000	50,800	39,800	58,400	62,775	32,232
Total waste Recycled	34,070	58,350	44,720	66,000	73,052	39,184
Percentage of waste Recycled	30%	34%	22%	55%	33%	31%

The HITS diverts more than 50 % of its waste from landfills.

We have recycled an average of 34 % waste,

Our goal is to reduce the E-waste generation

WASTE SEGREGATION BINS AT HITS



Paper and E Waste are sold to authorised Dealers

Color of BIN	White Bin	Yellow Bin	Blue Bin	Black Bin
Types of Waste	Paper waste	Glass, Metal Waste and E- waste.	Plastic Waste	Food Waste
Reduce	<ul style="list-style-type: none"> • Print and copy on both sides; • Use email to exchange documents and memos instead of printing or faxing; • Use electronic data storage instead of hard copy files. 	<ul style="list-style-type: none"> • Broken items may be recycled as scrap wood or metal. 	<ul style="list-style-type: none"> • Just say no to straws & disposables inside the campus 	<ul style="list-style-type: none"> • Engage with students to find out what could be improved and recruit them to sample new food items you'd like to offer. • Awareness posters

Recycle	<ul style="list-style-type: none"> • Reuse paper printed on one side for internal memos, "draft" documents or scratch pads; • Use recycled-content, chlorine-free paper products, and use soy or other agri-based inks for printing projects. 	<ul style="list-style-type: none"> • E-waste is segregated and send to vendors for recycling; • Recycling depots for recyclable containers are found inside and outside campus buildings. 	<ul style="list-style-type: none"> • Use a reusable bottle for drinks and use your backpack when carrying extra items, instead of using plastic and paper bags 	<ul style="list-style-type: none"> • Compost food waste for gardens. • Provide food scraps to farmers;
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DONATION OF BOOKS

At the end of every semester exams, the donation box for books is available in all hostels to collect the books and the books will be re-distributed and available to needy students. For request for collection of books contact the Dean Students Affairs, Hindustan Institute of Technology and Science, Bay View Campus, Kelambakkam, Chennai -603103.

BOOK SWAPPING AT SRMIST

Students of SRMIST came together for networking through a healthy exchange of books. Book swap was a successful and interactive initiative where the students have to go with books in hand. Swapping allows you to have the items you want, give someone else the things they have been searching for, while saving you both the cost of buying entirely new products. Trading your items also helps the environment, because you are not helping to create the need for more products to be made.

These new products require new packaging, which eventually ends up in landfills. If you bypass the new products when you are able to swap for the same items, you are not contributing to that cycle.

PROGRAMMES ORGANISED

CONFERENCE

Dr. R.M. Kuppan Chetty, Associate Professor, ANRO being honoured towards his Paper Presentation on “IoT Enabled Smart Waste Bin with Real Time Monitoring for Efficient Waste Management in Metropolitan Cities” at the 1st International Conference on “Automation, Mechatronics, & Robotics” at Philippines.

REDUCTION OF E-WASTE

The E-waste collected from the hostels and from other sites will be transferred for recycling to the local vendors on a monthly basis. The E- waste for recycling can be submitted to the IT Department on Friday in between 08.00 a.m. to 16.00 p.m. The collected items will be sent to local retailers for recycling services.

E-WASTE COLLECTED AND RECYCLING

Year	E-waste Collected
2016	CRT Monitors & TFT Monitors 448 Nos Keyboards 7Nos UPS seven Nos Inkjet Printers–10 Nos Dot-matrix Printers–16 Nos LaserJet Printers–24 Nos CPU cabinets–140 Nos
2017	Canon / HP Used Cartridges–135 Nos
2018	CPU Cabinets Units–104 Nos CRT monitors –37 Nos TFT Monitors–162 Nos HDD–153 Nos CD Writers–24 Nos RAM–125 Nos Printers–14 Nos Laptop Battery–24 Nos Motherboards without processor– 177Nos SMPS Units–137 Nos Keyboards & Mouse–76No Networking Passive Cables, Switches, Racks, Hubs–130 nos
2019	Canon / HP Used Cartridges–225 Nos
2020	HP/Cannon Empty Used Cartridges–282 Nos

Guest Lecture on “Waste Water Transport and Treatment” by Prof. Ian Holman, Head, Civil Engineering, Service Engineering and Food Technology, Cranfield University, UK on 19 Sept. 2020.

Dr. R.M. Kuppan Chetty, Associate Professor, ANRO being honoured towards his Paper Presentation on “IoT Enabled Smart Waste Bin with Real Time Monitoring for Efficient Waste Management in Metropolitan Cities” at the 1st International Conference on “Automation, Mechatronics, & Robotics” at Philippines.

Author	Research Paper	Research Area / Journals
Prabakaran B.	Experimental investigation of compression ignition engine fueled with Biobutanol and upgraded waste engine oil for performance	Cleaner Engineering and Technology
Chandrappa S., Murthy D.H.K., Reddy N.L., Babu S.J., Rangappa D., Bhargav U., Preethi V., Mamatha Kumari M., Shankar M.V.	Utilizing 2D materials to enhance H ₂ generation efficiency via photocatalytic reforming industrial and solid waste	Environmental Research
Mayakrishnan J., Selvakumar R.	Effect of variable compression ratio on performance and emissions in compression ignition engine fuelled with waste cooking oil with copper oxide nano fluid blends	International Journal of Vehicle Structures and Systems
Gowrishankar D., Kumar G.D., Prithviraj R., Sanjay V., Hariharan D., Vignesh M.	Synthesis and performance evaluation of fuel from waste plastics	International Journal of Vehicle Structures and Systems
Asaithambi P., Govindarajan R.	Hybrid Sono-Electrocoagulation Process for the Treatment of Landfill Leachate Wastewater: Optimization through a Central Composite Design Approach	Environmental Processes
John Presin Kumar A., Sivakumar S., Balaji R., Nadarajan M.	A Novel Banana Leaf Waste-Based Activated Carbon for Automobile Emission Control	Lecture Notes in Mechanical Engineering

CLEAN ENERGY POLICY

POLICY CREATED DATE	2011
POLICY REVIEW DATE	Every Six Month
CREATED BY	Electrical Engineering Department
RESPONSIBILITY	HOD EEE

The issue of renewable energy sources that have great potential to give solutions to the long standing energy problems of India has been considered. It has been stated that renewable energy.

Sources are an important part of India's plan to increase energy security and provide new generation with ample job opportunities. India's plans to move towards green technology and address environmental concerns associated with the country and the world have been characterized.

Understanding the above mentioned importance of clean energy, policy is implemented in Hindustan Institute of Technology and Science (HITS) for sustainable and clean energy.

Hindustan University won the Best Green Campus Award for the project Hindustan University Green Yuvatharang (HUGY). Bay Range Hindustan campus is built amidst a lush green stretch of over 150 acres abutting beautiful lakes. The green atmosphere is conducive for a calm and peaceful academic pursuit. The green campus has around 800 trees. This reduces the overall temperature in the campus by 3 to 4 degree Celsius and they absorb the entire atmospheric pollutants spewed by the vehicular emissions.

The Centre for Clean Energy and Nano Convergence Centre (CENCON)

The Centre for Clean Energy and Nano Convergence Centre (CENCON) was established in collaboration with Quantum – Functional Semiconductor Research Centre (QSRC) of Dongguk University with an objective to promote awareness, importance, basic and applied research in clean energy.

Initiatives

As a part of the energy awareness and conservation programme, HITS have and will hosts numerous workshops and training sessions on a regular basis. Energy Conservation week will be

observed every year during month of march. The 3rd and 4th days of the aforesaid week, will be observed as 'No Air Conditioner' and 'No Automobile' days respectively.

USE OF ALTERNATIVE ENERGY SOURCES

1.5kW Micro Wind Turbine had been installed on the roof top of Founders' block during January 2012 as a means of energy conservation.

100 kW Solar rooftop grid connected Power system is installed at our university which produces 800 Units of electricity per day. 1kg of coal when burnt produces 840g/kWh of Co₂ emission to the atmosphere. Co₂ being a green house gas, causing global warming will be prevented. By this green and clean installation, 67.2kg of Co₂ emission to the atmosphere is prevented. The electricity cost will be saved to the extent of Rs.6000 per day.

SOLAR PANEL CLEANING ROBOT (SOPAC), Massive price drops for solar technology are driving more installations, and solar power is expected to represent the cheapest form of energy around the globe. The efficiency losses of solar power plants are due to dust and other types of dirt layered over the panel. The efficiency loss is estimated around 25% in India and 35% the Middle East (monthly) due to less light coming through the solar cells. SOPAC is an autonomous, self-driven, battery operated solar panel cleaning robot works on a cost-effective solution to increase the efficiency of solar energy.

ASME's International Human Powered Vehicle Challenge will be hosted every year to provide an opportunity for the students to develop practical and sustainable modes of transportation.

Prime academic, tutorial, administrative and other spaces in all buildings are designed to take maximum advantage of ample Day Light and Cross Ventilation available outside free of cost.

All Residential Blocks and Hostels are equipped with and regularly use Solar Water Heaters and Cookers. Ample use of Solar Photo Voltaic cells can be witnessed in the campus to generate Solar Power.

Energy saving Devices are used in the campus: Light with Reflector and Solar Lamp

A Wind Mill has been installed in the campus and it is utilized to pump water out of the well.

Replacement of conventional lightings with LEDs

All the newly constructed hostel blocks are installed with 10 W LED lamps and the hostel toilets and corridors are installed with 20 W and 15 W LED lamps. A few of the washrooms/ restrooms in the academic buildings are equipped with occupancy sensor based CFL light.

Biodiesel heavy vehicles and solar powered cars in campus: busses operating within the campus are powered with 30% biodiesel. These vehicles have covered more than 60,000 km without any breakdown.

Design of an Energy Efficient Building

Implementing a whole-building systems approach to new construction.

The design should make efficient use of water and electricity and other natural resources and energy sources.

The design should strive to meet the Energy Star requirements for sustainability, the Leadership in Energy and Environmental Design (LEED) standards, and the International Green Construction Code (IgCC).

The design should take into consideration building orientation. The way a structure is situated on a site and the placement of windows, rooflines and other features is critical for efficiency.

Utilizing an energy modeling software is an effective way to estimate a building's energy use.

Purchase ENERGY STAR labeled office equipment which can save as much as half the electricity of standard office equipment.

Private Virtual Desktop Cloud Infrastructure (VDI)

Advantage of VDI over traditional Desktop is its lower power consumption, (37Watts/Node) which sums up to an annual saving of around INR 1 million.

The transportation policy

The transportation policy at HITS is unique. The students residing in the hostels are encouraged to use bicycles. They are not permitted to own any vehicle that uses fossil fuel.

Battery operated vehicles to reduce emission.

Programmes / Courses Offered

Students are a critical voice in moving campuses to be more sustainable and transition towards 100 percent renewable energy. Various programmes and courses will be introduced in upcoming academic years with relevant to clean energy and sustainable energy. It allows us to train young activists, future leaders and researchers to advocate for clean energy off-campus and in their communities.

Proposed courses are:

Ph.D in Energy Efficient Architecture

Ph.D in Renewable Energy

B.Arch in **Energy** Efficient Design

ETHICAL SOURCE OF FOOD SUPPLIES POLICY

POLICY CREATED DATE	2011
POLICY REVIEW DATE	Every Six Months
CREATED BY	HOD Bio-Tech and Food Technology
RESPONSIBILITY	HOD Bio-Tech

HITS's sustainable procurement policy focuses on sustainability, seasonality and provenance.

HITS is a purchaser with more than 57 suppliers, so it is essential to develop trusting, mutually beneficial, long-term relationships to guarantee the quality and safety of products across our supply chain.

We respond to client and customer expectations through our values by promoting purchasing policies that increase the use of environmentally sound and ethically sourced products. We encourage our suppliers to share our ethical principles and procurement commitments. As such, we expect them to comply with our supply chain code of conduct, which covers human rights, business ethics and environmental management practices.

Our approach to sustainable supplies includes sourcing products that meet industry marques and partnering with suppliers from the regions where we operate. We believe that, wherever possible, we should purchase fairly traded and ethically sourced products. This ensures better trading conditions for producers and helps us build lasting relationships with global suppliers that have sustainable business.

HITS's sustainable procurement policy focuses on sustainability, seasonality and provenance. We continually review our logistics arrangements in order to reduce delivery miles.

Eco-actions include promoting the use of ceramic mugs or glass cups for beverages to save on paper products, recycling office supplies such as discarded paper, purchasing recycled paper, and using refillable pens.

The institution has also placed large bins at different points on each floor to segregate wet and dry waste. To ensure this, and minimize the use of garbage bags, it does not allow dustbins at individual class rooms.

As a part of green initiative, we have replaced the plastic tableware in cafeteria with reusable cutlery.

Supporting local Organic Farmers and Their Communities by purchase of organic vegetables and providing awareness programme.

Expectations from Suppliers

- We expect our suppliers to support the ethical standards set out in this Policy with regard to workplace safety, environment, and fair pay and employment conditions in their work place.
- The Policy sets out the standards that we expect all of our suppliers to comply with when producing and supplying products for HITS.
- Suppliers shall not engage in acts of bribery and corruption and shall not falsify documents and records.
- Employment is freely chosen, there is no forced, bonded or involuntary labour. Suppliers will ensure that personal protective equipment is available and workers are trained in its use.
- HITS supports ILO Convention 138 with regard to the appropriate age of workers and will not work with suppliers who use child labour.
- Wages and benefits paid for a standard working week meet, at a minimum, national legal standards or industry benchmark standards, whichever is higher. In any event wages should always be enough to meet basic needs and to provide some discretionary income.
- In any event, workers shall not on a regular basis be required to work in excess of 48 hours per week and shall be provided with at least one day off for every 7 day period on average. Overtime shall be voluntary, shall not be excessive, shall not be demanded on a regular basis and shall always be compensated at a premium rate.
- There is no discrimination in hiring, compensation, access to training, promotion, termination or retirement based on race, caste, national origin, religion, age, disability, gender, marital status, sexual orientation, union membership or political affiliation.
- The facility shall comply with national and local environmental laws and regulations *f* The facility shall dispose of its production waste in accordance with local environmental laws and regulations *f* The facility must have identified and documented its key environmental impacts and implemented controls to minimize its impact on the environment with respect to solid waste disposal, hazardous chemicals storage and management, air and water emissions.

Compliance with the Policy

HITS's expects its suppliers to comply with all aspects of this Policy, and will be extending its coverage of audited facilities and compliance monitoring processes to include these standards.

HITS's is committed to working in partnership with its suppliers to help achieve compliance with this Policy. In the event where any supplier is unwilling or unable to demonstrate continuous improvement towards full compliance with our standards, the trading agreement between Woolworths Limited and the supplier will be terminated.

Key Contacts

For more information on HITS's Ethical Sourcing and Sustainability policies visit our website at www.hindustanuniv.ac.in

SUSTAINABLE WASTE MANAGEMENT POLICY

POLICY CREATED DATE	2011
POLICY REVIEW DATE	Every Six Months
CREATED BY	HOD Civil and Chemistry
RESPONSIBILITY	HOD Civil

Hindustan Institute of Technology and Science (HITS) is committed to enhancing the health and wellbeing of its campus community, to increasing safety practices, to reducing consumption of energy and fuels, to minimizing emissions, and to reducing solid and hazardous wastes. Members of the University community are expected to integrate into their daily operations best practices to reduce, reuse, and recycle materials, consistent with municipal, state, and central rules and guidance.

Purpose

HITS's endeavors to adopt practices that reflect a comprehensive approach to conserving resources and reducing and managing waste. Waste prevention, reuse, recycling, and composting are prioritized over landfill disposal. In order to minimize our environmental footprint; to provide guidance to the University community on best practices for reducing and recycling waste; and to promote adherence to environmental law, this policy establishes a sustainable, solid waste management program that communicates acceptable methods of handling, storing, recycling, and disposing of materials.

Policy Implementation

I. Waste management requirements

A. Adherence to applicable law and University procedures. All members of the HITS community are expected to handle, store, recycle, and dispose of materials in accordance with applicable law and University procedures, including all laws, regulations, and guidance documents referenced in this policy (see "Related Information" below; unless otherwise noted, the versions of such laws, regulations, and procedures currently in effect are to be followed). Specific guidelines relating to different types of waste are identified below.

B. Municipal solid waste. Waste streams such as non-hazardous wastes, recyclables, food wastes, and construction and demolition debris should be handled pursuant to sustain HITS's Recycling Guidelines.

C. Electronic waste. Indian law bans most forms of electronic waste from landfills in the state. All University-owned electronic waste will be recycled through Facilities Management's E-Cycling Program.

D. Hazardous waste. All University-generated hazardous waste must be labeled, handled, stored, and disposed consistent with the Office for Research Safety (ORS) guide developed to ensure that the management and disposal of hazardous waste at HITS is conducted consistent with applicable law.

E. *Universal waste*. All University-generated universal waste must be labeled, handled, stored, recycled, and disposed consistent with HITS's Universal Waste Guide.

Any questions regarding the categorization of different types of waste or the guidelines applicable to their management and disposal should be directed to either sustain HITS guide line or ORS.

Implementation responsibilities

- A. Department and vendor leaders are responsible for:
 - i. Reviewing operations to determine where waste can be reduced at its sources of generation;
 - ii. Acquiring, to the extent feasible and practicable, items that are durable, have minimal packaging, or are readily recyclable when discarded;
 - iii. Assessing purchasing decisions, making every attempt to purchase items only when needed and in amounts that are not excessive;
 - iv. Ensuring employees have access to compliant waste containers, including containers for recycling; and
 - v. Assuring only trained and certified employees, students, and vendors generate and label specially-regulated or hazardous wastes.

- B. HITS faculty, staff, students, and vendor personnel are responsible for:
 - i. Separating defined waste types and placing identified waste materials in the appropriate containers; and
 - ii. Handling specially-regulated or hazardous wastes only if trained and certified to do so.
- C. HITS's Office of Procurement and Payment Services is responsible for:
 - i. Prioritizing procurement of goods and services that have a less negative effect on human health and the environment;
 - ii. Promoting the purchase of durable and environmentally preferable products and prioritizing these purchases over procurement of single-use or disposable products; and
 - iii. Establishing contracts with vendors when necessary to responsibly handle University-generated waste.
- D. HITS's Office of Facilities Management is responsible for:
 - i. Establishing policies for the management of construction and demolition and executing construction and demolition contracts that include specific construction debris recycling targets;
 - ii. Facilitating the removal of regulated refrigerants from refrigerators and freezers and maintaining the pertinent records required by law or regulation;
 - iii. Managing collection areas for the drop-off of universal waste in each building;
 - iv. Providing standard trash containers; and
 - v. Maintaining contracts with custodial service providers responsible for collecting non-regulated waste.
- E. Northwestern's Office of 5's is responsible for:
 - i. Maintaining up-to-date procedures and training on the proper disposal of hazardous, radioactive, biological, and potentially infectious wastes generated in teaching or research laboratories;
 - ii. Providing approved containers for the disposal of hazardous, radioactive, biological, and potentially infectious wastes in teaching or research

laboratories; and

- iii. Managing contracts for the disposal of all hazardous wastes and for hazardous waste emergency response services.

F. HITS's Center for Sustainable Energy and Environment (CSEE) is responsible for:

- i. Maintaining procedures for the handling and disposal of hazardous and universal waste in non-research areas;
- ii. Training all non-research employees handling hazardous waste about proper waste handling procedures, safe use of personal protective equipment, and emergency procedures; and
- iii. Ensuring non-research departments follow all contractual hazardous waste and hazardous waste emergency response services requirements.

G. HITS's Office of Human Resources, through its my HR Learn system, serves as a records repository of completion of required trainings for those employed by HITS. For various reasons, Office of 5's or CSEE my maintain other training records outside of the HR Learn system.

Consequences of Violating this Policy

HITS faculty, students, or staff who fail to comply with the laws, regulations, and ordinances referenced in this policy could be subject to disciplinary action under Institutions policies and procedures, including termination of employment or academic dismissal.

The Institution may terminate its relationship with any third-party contractor who violates this policy.

Individuals who knowingly and deliberately release hazardous materials in violation of law could also be subject to criminal penalties.

INTELLECTUAL PROPERTY DEVELOPMENT – CONTRIBUTION TOWARDS UN’S SUSTAINABLE DEVELOPMENT GOALS

IPR Title (Patent/Copyright)	Date of publication	Faculty Name	Designation	Department
Plat plate collector to heat water for domestic applications using natural fibre as thermal insulato	11-04-2019	Dr. Hariram	Professor	MECH
Method for Managing the SAR value, QoS, and Energy consumption in Wideband Code Division Multiple Access	22-10-2020	Dr. Meenakshi N.	Asst. Professor	IT
Networks				
Improved Solar Powered Low Cost Tyre Pressure Sensing Assembly With Bifurcation For Automobiles	14/03/2011	Mr. Muthukumaran G	Associate professor	EIE
Intelligent Circuit for Automatic cut-off for Portable Immersion Heater	30/06/2014	Mr.Sambath M	Assistant Professor	CSE
		Mr. Sudalai Muthu T	Assistant Professor	CSE
		Mr. Thangakumar J	Assistant Professor	CSE
Solar Power Automatic Tapioca Harvester	30/06/2014	Mr. Sudalai Muthu T	Assistant Professor	CSE
		Mr.G.Muthukumaran	Associate Professor	EIE
Solar power production for 10 hrs a day using static solar panels	14/11/2014	Mr. Frank Wingston Jesudas	Associate professor	IT
		Dr. Nagarajan	Professor	IT
Design and Development of Double Basin Solar Still with Thermo Electric Module with Condensing Chamber	05-07-2016	Dr. D.G. Harris Samuel	Professor	MECH
		Mr. Ravishankar Sathyamurthy	Research Scholar	MECH

Solar Powered Automatic Tapioca Harvester (SoPoTaHa)	17/08/2012	Mr. Ashok Verghese	Director	HITS
		Mr.Sudalai Muthu T	Assistant Professor	CSE
		Mr. MuthuKumaran G	Associate professor	EIE
A Service Robot for COVID-19 Isolation Wards	27-04-2020	Dr.D.Dinakaran	Professor	CAR
		Dr M M Ramya	Professor	CAR
		Dr RM Kuppan Chetty	Associate Professor	CAR
		Mr J Akash	Student	CAR
		Mr P Sivaprakasam	Student	CAR
		Dr G K Kumar	Professor, Anesthesia	GH, Chengalpattu
Speech Communication for Aphasia Disorder (SCAD) using Machine Learning Technique	20-10-2020	Dr. Thangakumar J	Professor	CAR
		Dr. P. Ranjana	Professor	CAR
		M. Rajmohan	Associate Professor	CAR
Raising the efficiency of the Indian farmer by switching him from crops to electricity generation project	09-01-2012	Mr. Frank Winston Jesudas	Professor	IT

AWARDS

The institution has been bestowed with Good Green Governance award five times consecutively in recognition of environment friendly initiatives in its 150 acres plush green campus. It has successfully implemented 5S Workplace Management. Hindustan believes in benchmarking with the best and ensures that highest standards of quality are implemented it envisages and challenges convention to build a future beyond and aims at achieving the status of World Class University.

- Good Green Governance G3Award 2013 under the Higher Educational Institution Category in recognition for spear-heading Green University Revolution in India.

- Won SRISHTI's Award for Good Green Governance on the Earth Day in 2018. HITS HAND BOOK 2018 - 2019 Ranked No. 3 in Tamil Nadu in Top Engineering Colleges by Competition Success Review (CSR-GHRDC) Survey.
- Good Green Governance Award 2017 Australian Service Excellence Award Congratulations Team Hindustan Achievement Talk Good Green Governance Award 2017 was given to Hindustan University at New Delhi by Mr. Kalyan Patra, CEO of SHRISHTI Publications on 22nd April 2017.
- Greenmetrics Award 2017,2018 and 2019